

CubeSat Proximity Operations Demonstration (CPOD)

Active Technology Project (2012 - 2022)



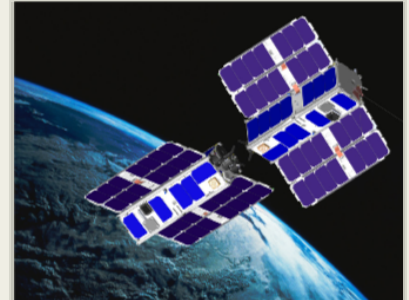
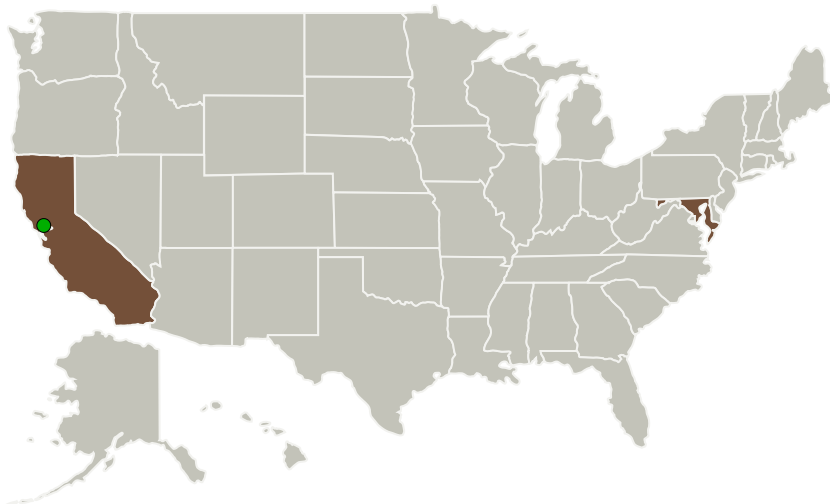
Project Introduction

The CPOD mission will test rendezvous, proximity operations and docking using two 3U CubeSats. Docking will employ the use of a novel universal docking device, imaging sensors, and a multi-thruster cold gas propulsion system. Using on-board navigation systems, one CubeSat will perform relative station-keeping and a series of precision circumnavigation maneuvers relative to the second CubeSat in order to validate and characterize new miniature proximity operations sensors.

Anticipated Benefits

The CPOD mission will validate and characterize several miniature, low-power proximity operations and relative station keeping technologies applicable to future science, exploration and space operations missions. In addition to demonstrating relative navigation capabilities, the mission will advance the state of the art in nanosatellite attitude determination, navigation and control systems.

Primary U.S. Work Locations and Key Partners



The Tyvak Nano-Satellite Systems, Inc. de-signed CPOD 3U CubeSat incorporates a suite of RPOD sensors, high performance low power processors, modular flight software, and an advanced control system that includes a multi...

Table of Contents

Project Introduction	1
Anticipated Benefits	1
Primary U.S. Work Locations and Key Partners	1
Organizational Responsibility	2
Project Management	2
Technology Maturity (TRL)	2
Images	3
Links	3
Project Website:	3
Technology Areas	3
Target Destination	3

CubeSat Proximity Operations Demonstration (CPOD)

Active Technology Project (2012 - 2022)



Organizations Performing Work	Role	Type	Location
Tyvak Nano-Satellite Systems Inc.	Lead Organization	Industry	Irvine, California
● Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California
Applied Defense Solutions Inc.	Supporting Organization	Industry	
California Polytechnic State University-San Luis Obispo(Cal Poly)	Supporting Organization	Academia Asian American Native American Pacific Islander (AANAPISI)	San Luis Obispo, California

Primary U.S. Work Locations

California	Maryland
------------	----------

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Tyvak Nano-Satellite Systems Inc.

Responsible Program:

Small Spacecraft Technology

Project Management

Program Director:

Christopher E Baker

Program Manager:

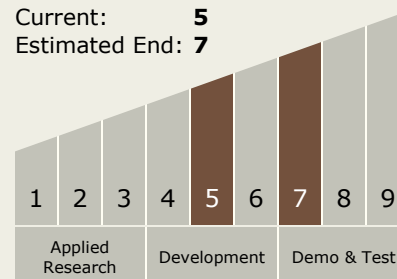
Roger Hunter

Principal Investigator:

Marco A Villa

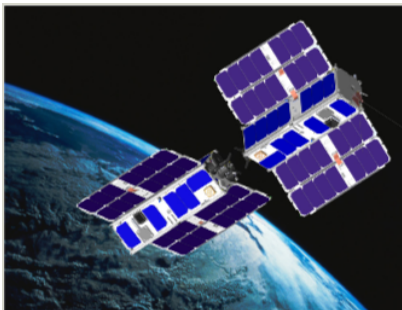
Technology Maturity (TRL)

Start: 5
 Current: 5
 Estimated End: 7





Images



CPOD Docking

The Tyvak Nano-Satellite Systems, Inc. de-signed CPOD 3U CubeSat incorporates a suite of RPOD sensors, high performance low power processors, modular flight soft-ware, and an advanced control system that includes a multi-thruster propulsion system.

(<https://techport.nasa.gov/image/102865>)

Links

CPOD Project Page

(https://www.nasa.gov/directorates/spacetech/small_spacecraft/cpod_project.html)

Project Website:

https://www.nasa.gov/directorates/spacetech/small_spacecraft/cpod_project.h

Technology Areas

Primary:

- TX17 Guidance, Navigation, and Control (GN&C)
 - └ TX17.2 Navigation Technologies
 - └ TX17.2.5 Rendezvous, Proximity Operations, and Capture Sensor Processing and Processors

Target Destination

Earth